

WHAT IS CLAIMED IS:

1. An electro-absorption optical modulator comprising:
 - an absorption layer;
 - upper and lower clad layers formed on upper and lower portions of the absorption layer, respectively; and
 - electrodes for applying an electric field to the absorption layer,
 - wherein the absorption layer is constructed by combination of two quantum wells having a width different from each other.
2. The electro-absorption optical modulator as claimed in claim 1, wherein the quantum wells are combined by the quantum well having a narrow width and the quantum well having a wide width at a ratio of $m : n$ ($m > n$).
3. The electro-absorption optical modulator as claimed in claim 2, wherein the quantum well having the narrow width has a value of α greater than that of the quantum well having the wide width in the following equation.
$$P_{out} = P_{in} \exp(- (V/V_0)^\alpha)$$
4. The electro-absorption optical modulator as claimed in claim 3, wherein the quantum well having the narrow width has the value of α greater than that of the quantum well having the wide width by at least 0.5.

5. The electro-absorption optical modulator as claimed in claim 1, wherein the absorption layer is made from an InGaAsP based material.

6. The electro-absorption optical modulator as claimed in claim 1, wherein the lower clad layer is formed of a semiconductor substrate.